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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,642	12/29/2003	Carles Borrego Bel	04904	1641

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EXAMINER	
BAUER, SCOTT ALLEN	

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/707,642	BORREGO BEL, CARLES	
	Examiner	Art Unit	
	Scott Bauer	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/18/05*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxwell, JR. et al. (US 6816758) in view of Frey et al. (US 2004/0174648).

3. With regard to Claim 1, Maxwell, JR et al. teaches an active safety circuit with loads (14), protected by solid state switches (20), of the type wherein a load or a group of loads is fed through at least one solid state relay controlled in turn from a unit such as a microcontroller (28) capable of opening the relay, which is at least one, in case an anomaly occurs in said loads (column 2 lines 66-67 & column 3 lines1-8), characterized by comprising a set of at least one temperature detector (34) associated to said solid state relay, which is at least one, and connected to said microcontroller such that the latter sequentially checks the state of said temperature detector (column 9 lines 30-38), to open, if an anomaly in temperature is produced, and if the problem persists (column 10 lines 2-37), the corresponding solid state relay (column 5 lines 26-34).

Maxwell JR. et al. does not teach a current breaking device inserted in the power supply network of said solid state relay, which is at least one, a grounded shunt line from one point of said supply network, placed between said fuse and said solid state relay, and a safety switch controlled by said microcontroller and inserted in said grounded shunt line.

Frey et al., in Figure 1, teaches an active safety circuit, comprising; a current breaking device (11) inserted in the power supply network of a load protective resistor (8), a ground shunt line placed between the circuit breaking device and load protective resistor, and a shunt device (21), controlled by a temperature sensor (28), which measures the temperature of the protective resistor (paragraph 0013). Frey et al. further teaches the closing of the shunt device if the temperature of the protective resistor exceeds a maximum limit. This short-circuits the grounded shunt line, which actuates the breaking device, and disconnects the protective resistor and load from the power source (paragraphs 0009 & 0013).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Maxwell JR. et al. with Frey et al. by including a crowbar circuit when monitoring the temperature of a solid state switch and using a microcontroller to trigger the shunt device for the purpose of preventing thermal damage of a solid state relay and further reducing the voltage across the heated relay which could cause additional damage.

4. With regard to Claim 2, Maxwell JR. et al., further discloses a safety circuit characterized in that the solid-state relay is a FET switch controlled by said microcontroller. (column 2 lines 46-53).

5. With regard to Claim 3, Frey et al. further discloses a safety circuit characterized in that said breaking device is a fuse, so that the passage of an over-current through it causes it to blow. (paragraph 0009).

6. With regard to Claim 4, Maxwell JR. et al. discloses A safety circuit characterized in that each load has an FET protection switch associated to it, and each of the switches has a dedicated temperature detector (column 10, lines 56-67 & column 11 lines 1-7).

7. With regard to Claim 5, Maxwell JR. et al. discloses a safety circuit characterized in that various loads have a single associated FET protection switch, and the single switch has a dedicated temperature detector (column 2, lines 34-41 & lines 57-61). Maxwell Jr. et al. teaches that a controller is capable of controlling the current to at least one load through at least one solid state relay and that the switches temperature is measured at or around the switch. This can be interpreted to mean that one switch can be used to control various loads and that that switch has a dedicated temperature sensor.

8. With regard to Claim 6, Frey et al. discloses a safety circuit, characterized in that said controlled safety switch is an electronic power switch. (paragraph 0030). Frey et al. teaches that the switch can be a thyristor, which is an electronic power switch. Frey et al. further teaches in figure 3 that a transistor (44) can be used as a safety switch to shunt current through the ground shunt line. The transistor is an electronic power switch as well.

9. Claims 7 & 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxwell JR. et al. in view of Frey et al. and further in view of Minami et al. (US 2004/0027750).

10. With regard to Claims 7 & 8, Maxwell JR. et al. in view of Frey et al. teach a safety circuit according to Claim 1 and further teach a controlled safety circuit that is a thyristor.

Maxwell JR. et al. in view of Frey et al. does not teach that the controlled safety circuit is of the FET type or a relay. Minami et al., teaches a digital protection and control device. The device contains a switch that can be a thyristor, power FET or mechanical relay (paragraph 0339).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Maxwell JR. et al., Frey et al. and Minami et al. by replacing a thyristor with a FET or mechanical relay for the purpose of ensuring that the safety switch can withstand the current flow through the shunt line.

Response to Arguments

11. Applicant's arguments filed 18 October 2005 have been fully considered but they are not persuasive. In the argument, Applicant states that the claimed invention makes provision for the safety circuit to determine the persistence of a temperature anomaly before shunting the power supply to ground. Applicant further states that the cited reference, Maxwell Jr. et al. (US 6816758), does not teach or suggest that once a predetermined level of the monitored parameter is reached, it is monitored for persistence before shunting the power supply to ground.

However, a further reading into Maxwell Jr. et al., discloses that a microcontroller sequentially checks the state of the temperature detector to open, if any anomaly in temperature is produced, the corresponding relay and, if the problem persists, to close the controlled safety switch.

12. Maxwell Jr. et al. discloses two methods of monitoring an anomaly for persistence once a predetermined threshold is reached. In the first method, the microcontroller stores a trip curve (Figure 4) and compares the measured parameters to this trip curve (column 9 lines 56-60). Specifically, Maxwell Jr. et al., in Column 10 lines 29-37, states, *"if the processing element in conjunction with the measuring element determine that the input current to the load will remain at or above a certain level for more than the maximum time permitted by the characteristic trip curve within a predefined period of time, the processing element can alter the input current to bring the measured value within the predetermined value range or below the predetermined value*

or, preferably, the processing element can place the solid-state switch in the on or off mode." Further, Maxwell Jr. et al states that, although the trip curve of Figure 4, is for a current parameter, the curve can additionally be predefined upon a combination of the various parameters associated with the switch such as temperature (column 10 lines 2-9).

13. Maxwell Jr. et al. discloses a second method of preventing a false trip as well. Maxwell Jr. et al., in column 10 lines 38-55, specifically states, *"In another advantageous embodiment, when the input current to the switch and/or the load reaches or exceeds a certain level, such as a maximum current rating or an input current rating, respectively, the processing element repeatedly increases a count. If the count exceeds a predetermined threshold representative of the predefined period of time, the processing element can alter the input current to reduce the input current to below the certain level, such as by placing the switch in the off mode. But if the input current to the load decreases to below the certain level before the count exceeds the threshold, the processing element will repeatedly decrease the count. In this regard, the processing element can account for previous current stress (e.g., excess current) to the switch and/or the load should the switch and/or the load experience a subsequent current stress before the count reaches zero since the count would begin upward again, although not from zero but from a value representative of the residual stress on the switch and/or the load."*

14. Although Maxwell Jr. et al. discloses that this method is used for detected input currents, column 9 lines 51-55 discloses that current or voltage rating characteristics can additionally take into account predetermined temperature values because current and voltage characteristics typically change over a range of temperatures.

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bauer whose telephone number is 571-272-5986. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAB

PHUONG T. VU
PRIMARY EXAMINER